Module 4: Circulation

Lesson 4-1

Circulation Objectives

Objectives

Objectives Legend

C=Cognitive A=Affective P=Psychomotor

1 = Knowledge level
2 = Application level
3 = Problem-solving level

Cognitive Objectives

At the completion of this lesson, the First Aid student will be able to:

4-1.1 Discuss the reasons the heart stops beating. (C-1)
4-1.2 Describe the components of basic life support/cardiopulmonary resuscitation (BLS/CPR). (C-1)
4-1.3 Describe each link in the chain of survival. (C-2)
4-1.4 Describe the steps of one-rescuer adult BLS/CPR (C-1)
4-1.5 Describe the technique of external chest compression on an adult. (C-1)
4-1.6 Discuss when the First Aider is able to stop BLS/CPR. (C-2)

Optional Infants and Children

- Describe the technique of external chest compression on the infant/child..
- Describe the steps of infant/child BLS/CPR.

Affective Objectives

At the completion of this lesson, the First Aid student will be able to:

4-1.7 Demonstrate a caring attitude towards persons in cardiac arrest. (A-3)
4-1.8 Place the interests of the ill or injured person in cardiac arrest as the foremost consideration when making emergency care decisions. (A-3)

Psychomotor Objectives

At the completion of this lesson, the First Aid student will be able to:

4-1.9 Demonstrate the proper technique of chest compression on an adult. (P-1,2)
4-1.10 Demonstrate the steps of adult one rescuer BLS/CPR. (P-1,2)

Optional Infants and Children

- Demonstrate the technique of external chest compression on the infant/child..
- Demonstrate the steps of infant/child BLS/CPR.

Preparation

Motivation:

Over 500,000 people die each year from cardiovascular diseases; two-thirds of these deaths occur outside the hospital, with sudden death (collapse) being the first sign.

It is now recognized that revival from cardiac arrest depends on a time-sensitive sequence of events. The American Heart Association has used the term chain of survival to describe these events.

The chain of survival has four interdependent links; early access, early basic cardiopulmonary resuscitation (BLS/CPR), early defibrillation, and early advanced life support (ACLS). The First Aider provides the important first two links in the Chain of Survival, early access and early BLS/CPR. This module will cover the elements of the Chain of Survival and the technique of BLS/CPR.

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Prerequisites:

Preparatory, Airway, Ill or injured person Assessment Modules

Materials

AV Equipment:

Utilize various audio-visual materials relating to first aid. The continuous development of new audio-visual materials relating to first aid requires careful review to determine which best meet the needs of the program. Materials should be edited to ensure that the objectives of these guidelines are met.

Equipment:
Manikins, gloves and/or other barriers.

Recommended Minimum Time to Complete:

See page 12 of Instructor's Course Guide

Presentation

Declaritive (What)

I. Review of the Circulatory System
   A. Function
      1. Deliver oxygen and nutrients to the tissues
      2. Remove waste products from the tissues
   B. Components/Anatomy
      1. Heart
      2. Arteries
         a. Carotid
         b. Femoral
         c. Radial
         d. Brachial
      3. Capillaries
      4. Veins - vessels that carry blood back to the heart
      5. Blood
         a. Carries oxygen and carbon dioxide
   C. Physiology
      1. Pulse can be felt anywhere an artery passes near the skin surface and over a bone.
         a. Carotid
         b. Femoral
         c. Radial
         d. Brachial
      2. A pulse can be felt in the major arteries.
      3. If the heart stops contracting, no blood will flow.
      4. The body cannot survive when the heart stops.
         a. When the ill or injured person has no pulse, they are in cardiac arrest.
         b. Brain damage begins 4 minutes after the ill or injured person suffers cardiac arrest.
         c. Brain damage becomes certain in 10 minutes.
         d. External chest compressions are used to circulate blood any time that the heart is not beating.
         e. External chest compressions are combined with artificial ventilation to oxygenate the blood.
         f. The combination of artificial ventilation and external chest compressions is called cardio-pulmonary resuscitation (BLS/CPR)
      5. General reasons for the heart to stop beating
         a. Sudden death from heart disease

b. Respiratory arrest, especially in infants and children
c. Medical emergencies (stroke, epilepsy, diabetes, allergic reactions, electrical shock, poisoning, etc.)
d. Drowning, suffocation and hereditary abnormalities
e. Trauma and bleeding

Regardless of the reason, the First Aider's emergency care of cardiac arrest is BLS/CPR.

II. Cardiopulmonary Resuscitation

A. A combination of artificial ventilation and external chest compressions to oxygenate and circulate blood when the ill or injured person is in cardiac arrest.
B. External chest compressions
   1. Depressing the sternum to change the pressure in the chest
   2. This causes enough blood to flow to sustain life for a short period of time.
C. BLS/CPR is only effective for a short period of time
   1. Cannot sustain life indefinitely
   2. Must be started as early as possible
   3. Effectiveness decreases the longer you are doing BLS/CPR
   4. In many cases the ill or injured person needs to be defibrillated to survive
   5. BLS/CPR increases the amount of time that defibrillation will be effective
D. The chain of survival and the EMS system
   1. Weak links in the chain lower survival rates
   2. Early access - Phone first/fast
   3. Early BLS/CPR
   4. Early defibrillation
   5. Early advanced cardiac life support (ACLS)
E. The steps of one rescuer adult BLS/CPR

See "Adult Basic Life Support " in the most current version of the Emergency Cardiac Care Committee and

Subcommittees, American Heart Association. Guidelines for cardiopulmonary resuscitation and emergency cardiac care (JAMA).

Optional Infants and Children - One rescuer inafant and child BLS/CPR

See "Pediatric Basic Life Support " in the most current version of

the Emergency Cardiac Care Committee and Subcommittees,

American Heart Association. Guidelines for cardiopulmonary resuscitation and emergency cardiac care (JAMA).

Application

Procedural (How)

1. Using a manikin, demonstrate emergency care of a ill or injured person in cardiac arrest.

Contextual (When, Where, Why)

1. The First Aid student should prepare to care for ill or injured persons in cardiac arrest. Students should practice Basic Life Support until they reach a level of reasonable proficiency.

Student Activities

Auditory (Hearing)

1. The student should hear information about the Chain of Survival as it relates to the outcome of resuscitation attempts.

Visual (Seeing)

1. The student should see the instructor demonstrate Adult Basic Life Support.
2. The student should see visual representations of cardiac arrest resuscitation efforts by First Aiders.
3. Optional - The student should see the instructor demonstrate Pediatric Basic Life Support.

Kinesthetic (Doing)

1. The student should practice BLS/CPR.

Instructor Activities

1. Facilitate discussion and supervise practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content.

Evaluation

Evaluate the actions of First Aid students during role play, practice or other skill stations to determine their comprehension of the cognitive and affective objectives and reasonable proficiency with the psychomotor objectives.

Remediation

Identify students or groups of students who are having difficulty with this subject content.

Enrichment

Address unique student requirements or local area needs concerning this topic.